

Ser. No. 10/733,606

Amendments to the Claims

1. (Currently amended) An apparatus for cleaning a surface within a vessel having a vessel wall separating a vessel exterior from a vessel interior and having a wall aperture, the apparatus comprising:

an elongate conduit having an upstream first end and a downstream second end and positioned to direct a shockwave from the second end into the vessel interior; and

an inspection camera apparatus comprising:

a support member;

a head extensibly and retractably held by the support member in an operative position within the vessel interior;

a light source, at least a light emitting element of said source carried by the head;

and

a camera, at least an incident lens of said camera carried by the head so as to capture light from said light source as returned by said surface.

2. (Original) The apparatus of claim 1 further comprising:

a source of fuel and oxidizer coupled to the conduit to deliver the fuel and oxidizer to the conduit; and

an initiator positioned to initiate a reaction of the fuel and oxidizer to produce the shockwave.

3. (Original) The apparatus of claim 1 wherein:

the camera is carried essentially within the head; and

the light source is carried essentially within the head.

4. (Currently amended) The apparatus of claim 1 wherein ~~the camera apparatus further comprises:~~

the support member is a cooling fluid-carrying support member.

Ser. No. 10/733,606

5. (Original) The apparatus of claim 1 wherein:
the support member has a main portion and a distal portion at least partially transverse thereto.
6. (Original) The apparatus of claim 1 wherein:
the surface is an exterior surface of at least one tube in a first tube bundle;
the support member extends between the first tube bundle and a second tube bundle; and
the head is positioned between first and second tubes of the first tube bundle.
7. (Withdrawn – currently amended) An inspection camera apparatus comprising:
a support mechanism;
a head extensibly and retractably held by the support mechanism in an operative position within the vessel interior;
a light source, at least a light emitting element of said source carried by the head;
a camera, at least an incident lens of said camera carried by the head so as to capture light from said source as returned ~~by said surface;~~
~~a support mechanism for holding the head in an operative position;~~ and
a cooling fluid flowpath at least partially through the support mechanism.
8. (Canceled)
9. (Withdrawn) The apparatus of claim 7 wherein:
the support mechanism includes main portion and a distal portion essentially normal thereto.
10. (Withdrawn - currently amended) The apparatus of claim 9 wherein:
the support mechanism contains lines carrying signal communication from the camera and power to the light source, the lines being cooled by the cooling fluid.
11. (Withdrawn) The apparatus of claim 7 used in combination with a detonative cleaning

Ser. No. 10/733,606

apparatus.

12. (Withdrawn – currently amended) A method for cleaning a surface within a vessel of a piece of industrial equipment, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit;

initiating a reaction of the fuel and oxidizer so as to cause a shockwave to impinge upon the surface; and

using a camera having an integral light source within the vessel to inspect the surface while the industrial equipment is in operation, the using comprising extending and retracting a camera head relative to a support member.

13. (Withdrawn) The method of claim 12 performed in a repeated sequential way.

14. (Withdrawn – currently amended) The method of claim 12 further comprising:
cooling the a camera head.

15. (Withdrawn) The method of claim 12 further comprising:
inserting the camera between adjacent first and second tube bundles and then between first and second tubes of the first bundle.

16. (New) The apparatus of claim 1 wherein the camera apparatus further comprises:
a flexible support core extending within the support member and having a downstream end portion supporting the head.

17. (New) The apparatus of claim 16 wherein the camera apparatus further comprises:
at least one coolant line input line passing a coolant downstream to the head for cooling the head.

18. (New) The apparatus of claim 16 wherein:

Ser. No. 10/733,606

the head is rotatable about an axis of the head and a distal portion of the support member.

19. (New) The apparatus of claim 16 wherein:

the camera and light source are aimed in a direction transverse to an axis of the head and a distal portion of the support member.

20. (New) The apparatus of claim 1 wherein:

the camera apparatus comprises one or more light filters for selectively passing a light range.

21. (New) The apparatus of claim 1 wherein:

the camera apparatus comprises one or more light filters for selectively passing a light range associated with given radical species selected from the group consisting of CH and OH.